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Mondeguina, a new genus for *Apatetris mediterranella* Nel & Varenne, 2012, with description of a new species from Portugal (Lepidoptera, Gelechiidae)

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Abstract. Following the discovery of a new species on the western coast of Portugal which is closely related to *Apatetris mediterranella* Nel & Varenne, 2012, the generic placement of both species is considered in relation to other genera within the *Apatetris* complex resulting in the description of a new genus, *Mondeguina*.

Introduction

Apatetris mediterranella Nel & Varenne, 2012 was described from the coasts of France, Corsica and Italy. The species was observed to have distinctive characters, particularly the long antennae and unusually slender hindwings. These characters had baffled the authors for some time as they considered at one stage that the species might belong to Gracillariidae or even to *Neomariania* Mariani, 1943 in the Stathmopodidae. Eventually it was recognised as belonging to Gelechiidae. In spite of the unusual characters for this family, the species was placed in the genus *Apatetris* Staudinger, 1880. The authors considered the possibility of placing it in a new genus, but were advised not to do so because *Apatetris* and related genera remain unrevised on a global scale.

In 2017, J.R. found a small moth species near the Portuguese coast which he identified as possible *A. mediterranella*. Subsequently M.C. examined specimens and considered that this could represent an undescribed species. Meanwhile a DNA barcode was obtained within Portugal-based InBIO Barcoding Initiative from a previously unidentified specimen collected in 2015 by J.R. which showed a 5.5% pairwise divergence from *A. mediterranella*, indicating that this was likely a related but different species. Detailed examination of male and female genitalia confirmed this hypothesis.

In this paper we describe a new genus, *Mondeguina* to accommodate *Apatetris mediterranella* and the new species from Portugal described below and we discuss the reasons for excluding them from the genus *Apatetris*.

Materials and methods

Material examined

Mondeguina mediterranella (Nel & Varenne, 2012): Italy, Friuli Venezia Giulia, Prov. Gorizia, Staranzano, loc. Cona (Canale Quarantia) 13.viii.2000. leg. L. Morin, male gen. prep. 05/1230 P. Huemer (TLMF); France, Bouches-du-Rhône, Arles, 5.viii.2007, leg. Th. Varenne (TVRC) female gen. prep. M. Dale 02653.

Apatetris agenjoi Gozmány, 1954: Portugal, Algarve, Salir, Lagoa da Nave, 22.iv.1992, leg. M. Corley, Corley gen. prep. 302; Portugal, Beira Baixa, Rosmaninhal, 14.v.2018, leg. M. Corley, Corley male gen. prep. 5957, INV06257.

Material of *M. atlanticella* sp. nov. is listed under description of the new species.

Genitalia were dissected using standard techniques (Robinson 1976).

DNA extraction and sequencing

Three specimens were selected for DNA barcoding (INV00726, INV05884 and INV06257). Genomic DNA was extracted from leg tissue using QIAamp DNA Micro Kit (Citomed, Lisboa, Portugal) following manufacturer's protocol, except for the lysis period which was extended to enhance extraction success. The cytochrome c oxidase I (COI) barcoding fragment was amplified using primers LepF and LepR (Hebert et al. 2004). PCR reactions had 10 µL of final volume, containing 5 µL of Multiplex PCR Master Mix (QIAGEN, Hilden, Germany), 0.4µM of each primer, and 1–2µL of DNA. PCR amplification was carried out on a T100 Thermal Cycler (BioRad, Hercules, CA, USA) using the following conditions: initial denaturisation at 95 °C for 15 min; 5 cycles at 95 °C for 30 s, 47 °C for 45 s, 72 °C for 45 s; then 40 cycles at 95 °C for 30 s, 51 °C for 45 s, 72 °C for 45 s; and a final elongation step at 60 °C for 10 min. Chromatograms were checked using Geneious v.10.2.3 (http://www.geneious.com/) and aligned using MUSCLE (with 10 as the maximum number of iterations (Edgar 2004), and alignments trimmed and corrected manually when necessary). The sequence obtained was blasted against GenBank and BOLD databases.

Phylogenetic analyses

Sequences available in BOLD for species of the genera *Apatetris*, *Dactylotula* Cockerell, 1888, *Epiphthora* Meyrick, 1888 and *Catatinagma* Rebel, 1903 were selected to provide a phylogenetic context to the genus and species described in this work (Table 1). Three species of *Epidola* Staudinger, 1859 (Table 1) were used as an outgroup. The best-fitting model of sequence evolution was determined using jModeltest v.2.1.10 (Darriba et al. 2012) under the Akaike Information Criterion (AIC). Haplotype alignments were analysed using Maximum Likelihood (ML) method. ML trees were built in PhyML (Guindon et al. 2010) with 1,000 bootstrap replicates and searching for the best-scoring ML tree. The average divergence (uncorrected p-distance) between species was calculated in MEGA v.7.0.26 (Kumar et al. 2016) for the COI sequence data.

Abbreviations

INV	Reference number for invertebrate sample in InBIO Barcoding Initiative, Portugal
JRRC	Research collection of Jorge Rosete, Portugal
MCRC	Research collection of Martin Corley, United Kingdom

NHMUK Natural History Museum, London
TLMF Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria
TVRC Research collection of Thierry Varenne, France

Results

Molecular data

All samples amplified the COI barcoding fragment. The final COI dataset consisted of 29 sequences (658 bp long) (Fig. 1). The most appropriate model for the COI dataset was GTR+G+I. Tree topologies from ML approach exhibit high bootstrap values (≥0.95%) to all species (Fig. 1).

Within the dataset the maximum pairwise divergence within genus was obtained between *Epidola nuraghella* Hartig, 1939 and *Epidola stigma* Staudinger, 1859 (p-distance = 9%) and the minimum pairwise divergence between species (4%) was observed between *Dactylotula kinkerella* (Snellen, 1876) from Germany and Denmark and *D. kinkerella* from southern countries that belong in fact to *D. altithermella* (Walsingham, 1903) (Table 2, see discussion). The specimens of the *Mondeguina* species exhibited 5% pairwise sequence divergence and 10% or more from other genera, namely *Apatetris* and *Catatinagma*.

Table 1. List of specimens included in the molecular analysis.

Taxa	BOLD Process ID	BOLD BIN	IBI code	Country
Apatetris sp.	WALPB1429-14	BOLD:ACL3034		Australia
	LECRT114-16	BOLD:ABA4360		Bulgaria
	LECRT115-16	BOLD:ABA4360		Bulgaria
	LEGEL255-18	BOLD:ABA4360		Croatia
	LEGEL253-18	BOLD:ABA4360		Macedonia
	LEGEL044-18	BOLD:ABA4360		Bulgaria
	LEFIJ2700-15	BOLD:ABA4360		Bulgaria
	PHLAE482-11	BOLD:ABA4360		Italy
Catatinagma agenjoi	IBILP1359-19	BOLD:ADM1885	INV06257	Portugal
	LEGEL251-18	BOLD:ADM1885		Spain
Catatinagma kraterella	LEASU226-18	BOLD:ACB0721		Russia
Catatinagma trivittellum	LEGEL209-18	BOLD:ADL7614		Macedonia
Dactylotula kinkerella	GBGL12251-13	BOLD:ACH7599		Denmark
	FGMLD761-13	BOLD:ACH7599		Germany
Dactylotula altithermella	LEGEL248-18	BOLD:ADL7709		France
	LEGEL247-18	BOLD:ADL7709		Czech Republic
	LEGEL160-18	BOLD:ADL7709		Spain
	LEASU225-18	BOLD:ADL7709		Spain
Epidola barcinonella	PHLAG360-12	BOLD:ADR9309		Spain
Epidola nuraghella	LEGEL079-18	BOLD:ADM4659		Italy
Epidola stigma	LEASU1176-18	BOLD:ABX1734		France
Epiphthora anisaula	ANICX1664-11	BOLD:AAU1412		Australia
Epiphthora belonodes	ANICX1610-11	BOLD:AAV6530		Australia
Epiphthora thyellias	ANICX1653-11	BOLD:ADL0281		Australia
Mondeguina atlanticella	IBILP1564-19	BOLD:AEC0670	INV00726	Portugal
	IBILP1565-19	BOLD:AEC0670	INV05884	Portugal
Mondeguina mediterranella	PHLAE484-11	BOLD:ABA4709		Italy
	PHLAD553-11	BOLD:ABA4709		Italy
	PHLAE483-11	BOLD:ABA4709		Italy

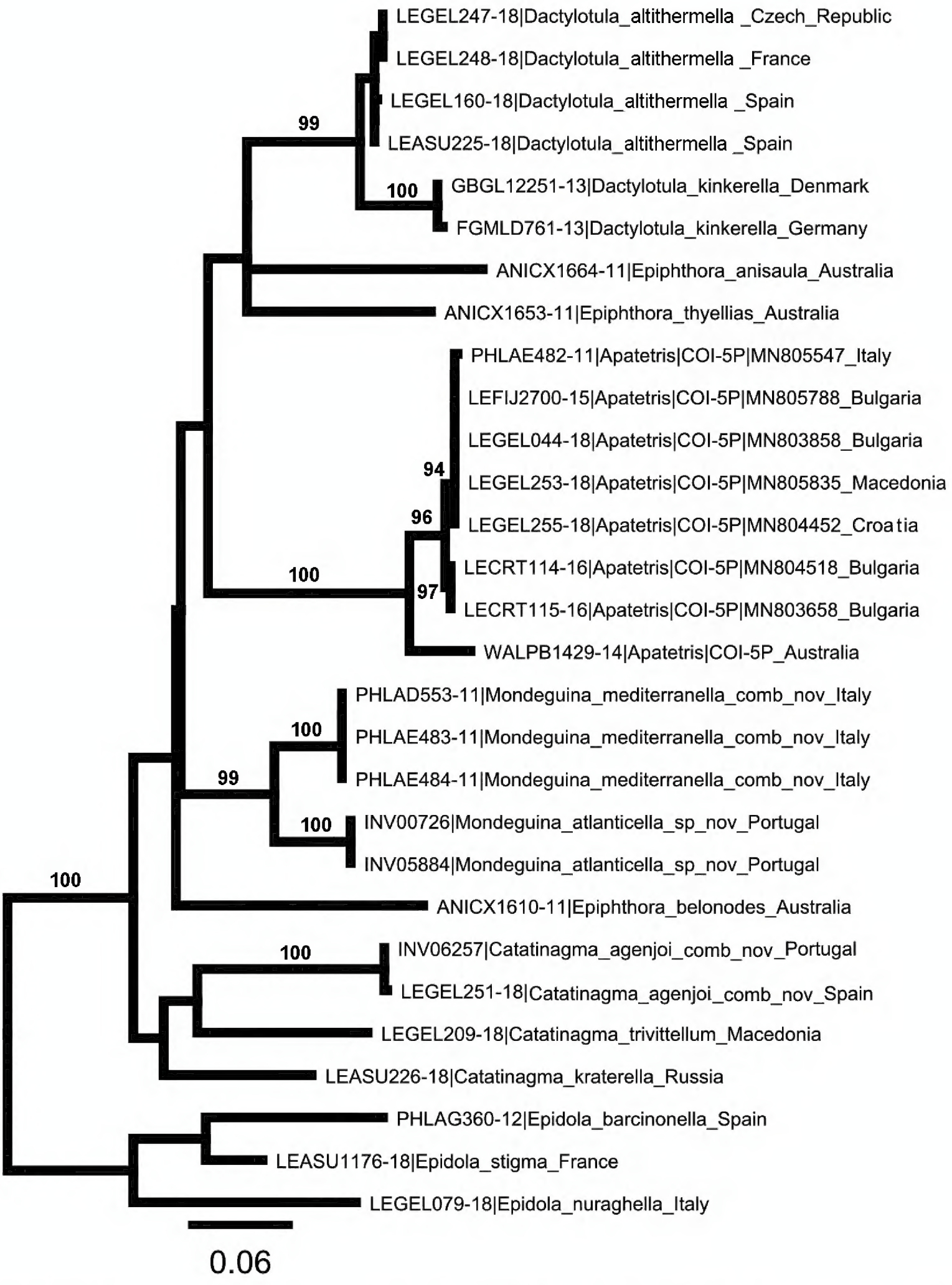


Figure 1. Gene tree obtained by Maximum Likelihood (ML) analysis of five *Mondeguina* gen. nov. specimens within the context of representative sequences of close related genera: *Apatetris*, *Catatinagma*, *Dactylotula and Epiphthora* based on available sequences of a fragment of cytochrome c oxidase I gene (COI) (658 bp). Bootstrap values (>90%) are indicated at nodes.

Table 2. Mean (below diagonal) and standard deviation (above diagonal) pairwise sequence divergence (uncorrected p-distances) at the 658 bp DNA barcoding fragment of cytochrome c oxidase I (COI) among pairs of species of species.

	Apatetris agenjoi	*Apatetris* sp. (Australia)	*Apatetris* sp. (Europe)	*Catatinagma krateralla*	*Catatinagma trivittellum*	*Dactylotula altithermella*	*Dactylotula kinkerella*	*Epidola barcinonella*	*Epidola nuraghella*	*Epidola stigma*	*Epiphthora anisaula*	*Epiphthora belonodes*	*Epiphthora thyellias*	*Mondeguina atlanticella*	*Mondeguina mediterranella*
Apatetris agenjoi		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
***Apatetris* sp. (Australia)**	0.11		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
***Apatetris* sp. (Europe)**	0.11	0.04		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Catatinagma krateralla	0.09	0.13	0.13		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Catatinagma trivittellum	0.09	0.12	0.12	0.10		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Dactylotula altithermella	0.10	0.11	0.11	0.11	0.10		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Dactylotula kinkerella	0.11	0.12	0.11	0.12	0.12	0.04		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Epidola barcinonella	0.16	0.16	0.16	0.14	0.15	0.16	0.16		0.01	0.01	0.01	0.01	0.01	0.01	0.01
Epidola nuraghella	0.13	0.15	0.14	0.13	0.13	0.14	0.15	0.13		0.01	0.01	0.01	0.01	0.01	0.01
Epidola stigma	0.15	0.15	0.14	0.13	0.15	0.15	0.15	0.09	0.11		0.01	0.01	0.01	0.01	0.01
Epiphthora anisaula	0.13	0.12	0.13	0.13	0.13	0.10	0.12	0.16	0.15	0.16		0.01	0.01	0.01	0.01
Epiphthora belonodes	0.12	0.12	0.12	0.11	0.12	0.11	0.12	0.16	0.12	0.14	0.12		0.01	0.01	0.01
Epiphthora thyellias	0.11	0.10	0.10	0.12	0.12	0.10	0.11	0.16	0.15	0.16	0.11	0.11		0.01	0.01
Mondeguina atlanticella	0.12	0.12	0.12	0.10	0.12	0.10	0.11	0.16	0.14	0.14	0.12	0.11	0.12		0.01
Mondeguina mediterranella	0.12	0.12	0.11	0.10	0.11	0.10	0.11	0.17	0.14	0.14	0.12	0.11	0.12	0.05	

Mondeguina Corley & Rosete, gen. nov.

http://zoobank.org/C8584176-8E49-4D5D-92D3-6C8B38DD2BDD

Figs 2–8

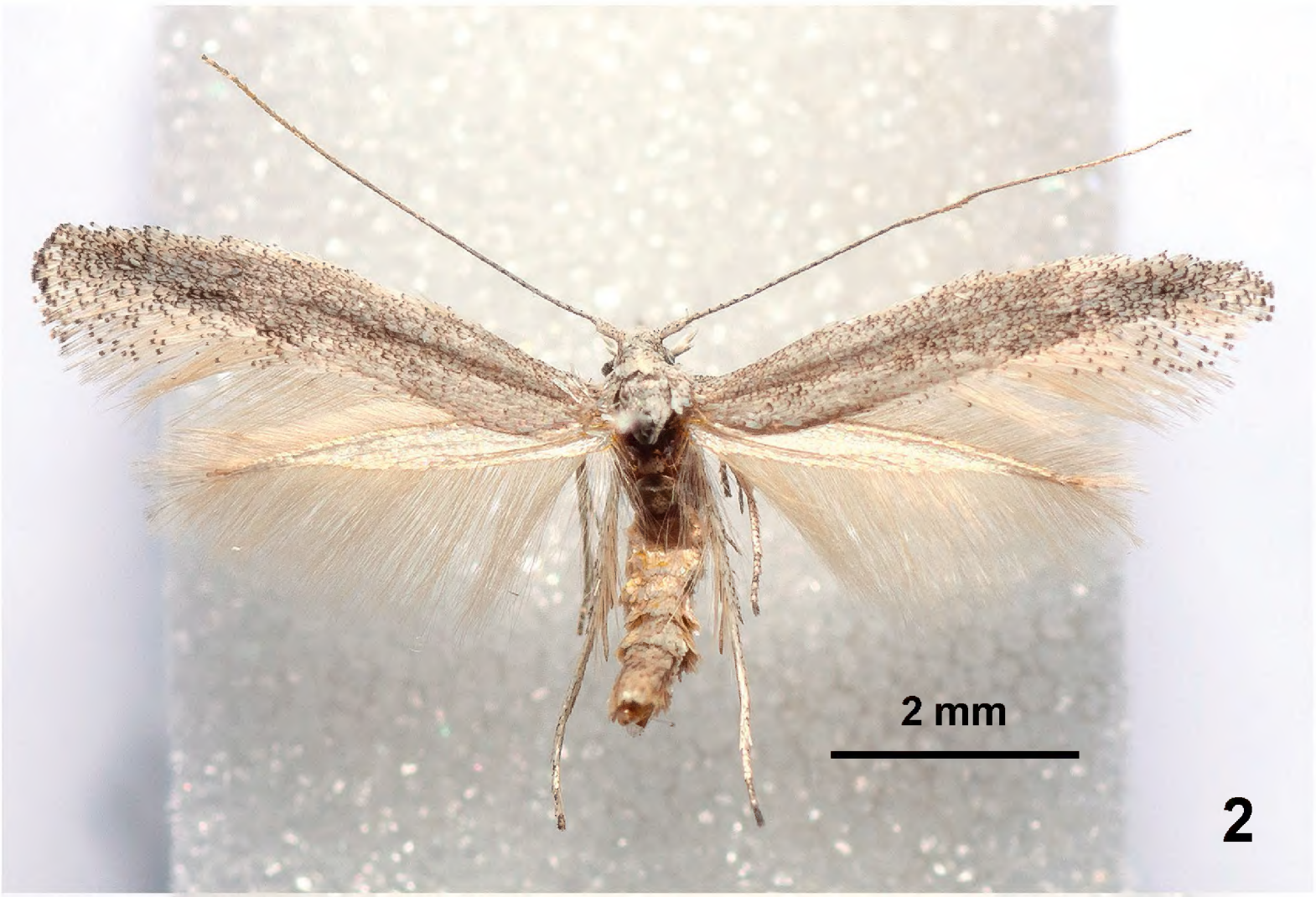
Type species. *Mondeguina atlanticella* Corley & Rosete, sp. nov.

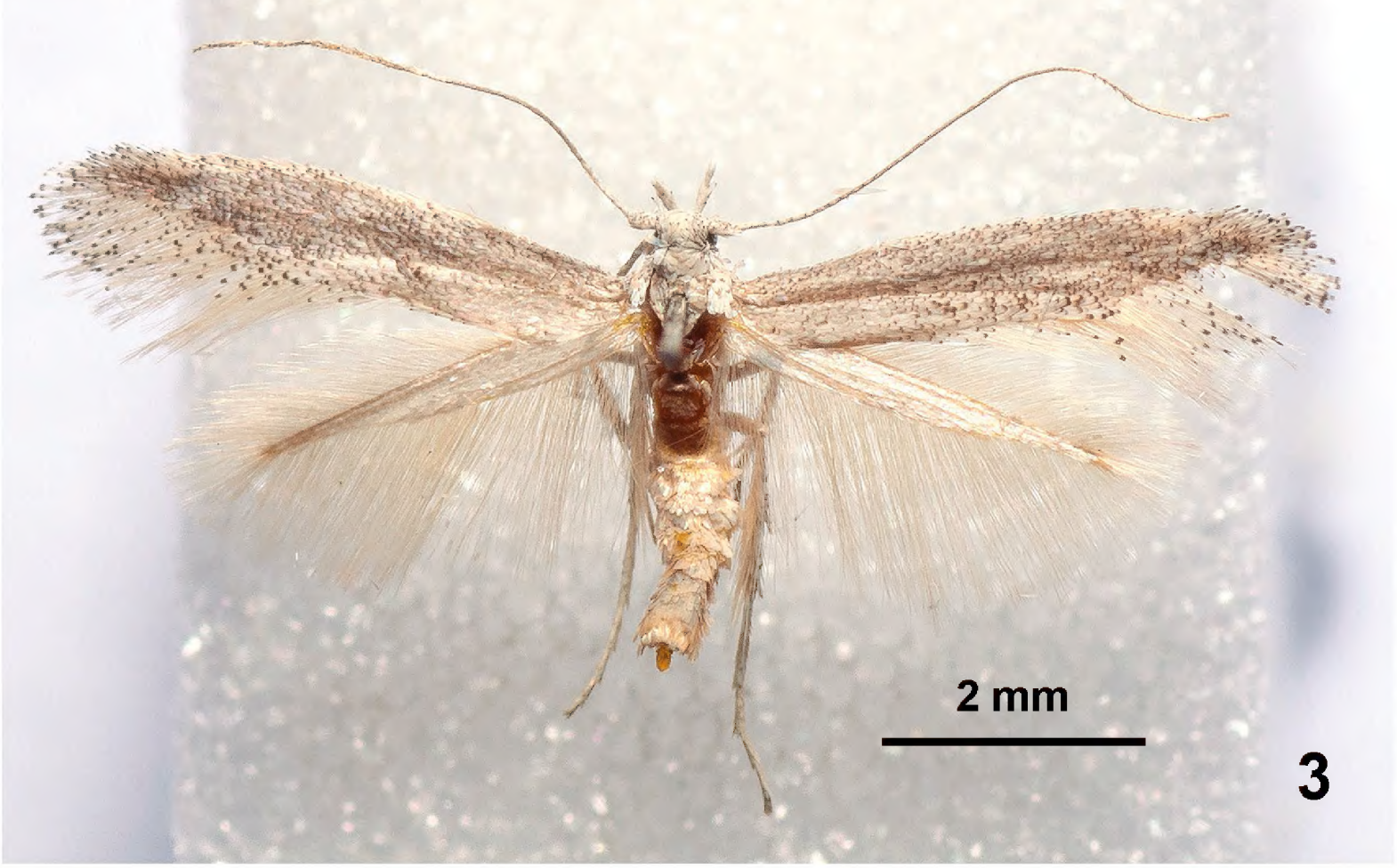
Description. Wingspan 9–12 mm. Head with face flat and vertex smooth with appressed scales. Haustellum rudimentary. Labial palp segment 2 porrect, slightly thickened with scales which extend beyond base of segment 3, segment 3 upturned, about half as long as and thinner than segment 2, obtuse at apex. Antenna about nine-tenths length of forewing, scape elliptic, bearing pecten of about 12 hair-like scales, flagellum filiform. Forewing elongate, five times as long as wide, costa slightly curved in middle, apex acute but appearing rounded due to long scales around apex, dark-tipped scales give whole wing a speckled appearance, indistinct markings formed by groups of scales with longer dark tips; fringe of larger scales with blacker tips, not organised into a fringe line, dorsal fringe of hair-like scales. Hindwing slender, half as wide as forewing, widest at one-quarter, tapering most strongly between half and three-fifths, apical two-fifths very slender, narrowly acute at apex; fringes whitish, as long as wing width on costal side near base, longer towards apex and up to four times wing width on dorsal side. Venation (figured by Nel and Varenne 2012) of forewing with cell long, R_4 and R_5 stalked, R_5 to apex, M_1 and M_2 stalked, M_3 absent; hindwing with reduced venation, Rs free and unbranched to apex, M_1 absent, M_2 reduced to a fold, M_3, Cu_1 and Cu_2 curved, A_{1+2} very short. Legs with unequal pair of spurs on mid-tibia, and two unequal pairs on hind tibia.

Male genitalia. (Figs 4–6). Uncus inserted on posterior side of tegumen, consisting of a pair of stout lobes; gnathos absent; tegumen wider than long; valva just longer than its width at base with broad sacculus reaching beyond middle, apex slightly expanded on ventral side forming a group of short sclerotised pegs; saccus short, wide and rounded, widest in middle; aedeagus tapering from base or a little above to two-thirds, apical third narrower sometimes ending in a slight hook.

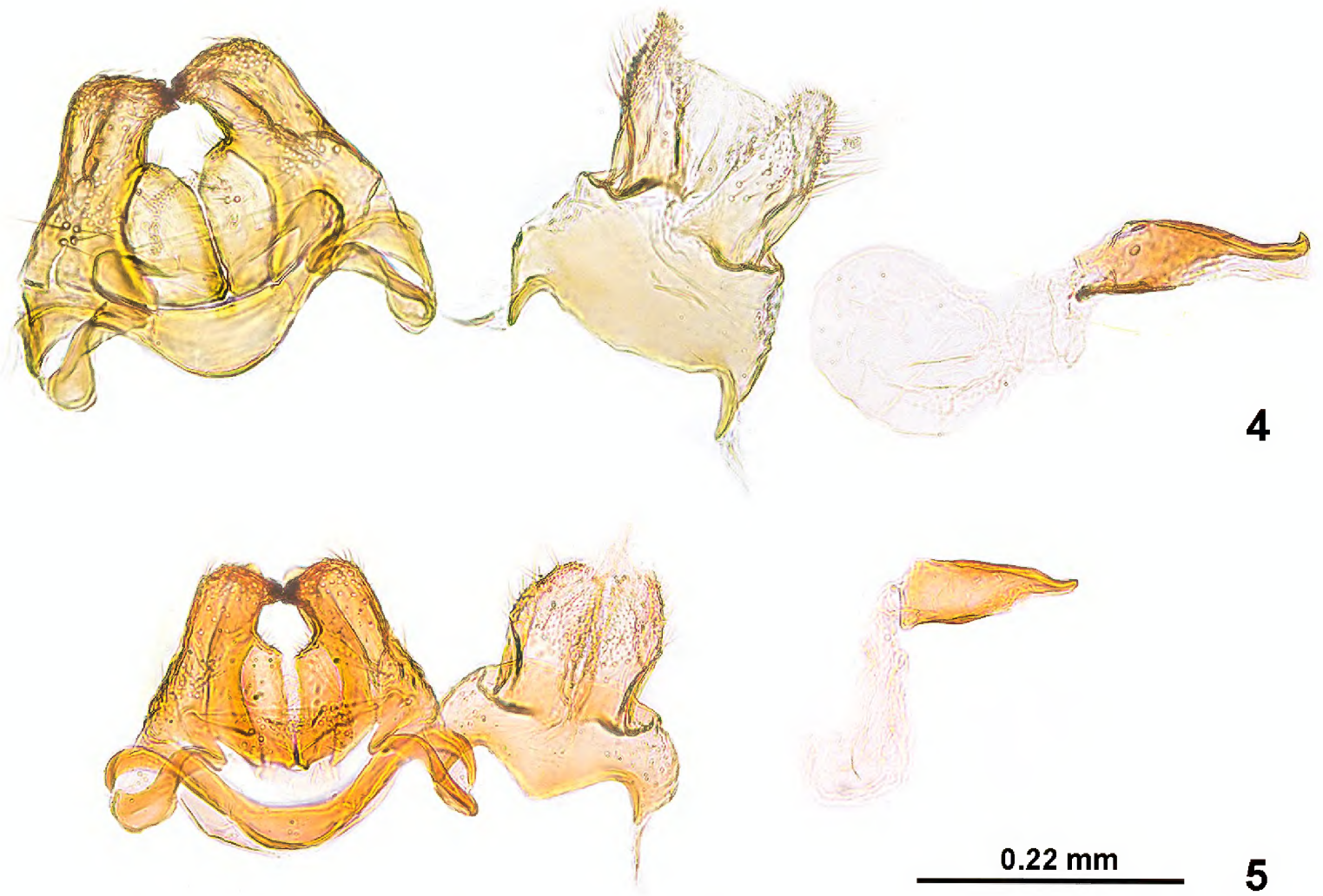
Female genitalia. (Figs 7, 8). Papillae anales almost spherical but somewhat flattened on their adjacent faces, with a transverse fold on the dorsal side; posterior apophysis less than length of papilla analis; segment VIII about twice as wide as long, dorsal side rectangular, ventral side largely excavated, anterior apophysis short, half as long as posterior apophysis or less; ostium on anterior margin of segment VIII; ductus bursae unsclerotised, corpus bursae elliptic, without signum.

Diagnosis. *Mondeguina* gen. nov. is characterised by antenna nearly as long as forewing, scape with pecten; forewing venation (figured by Nel and Varenne 2012) M_1 and M_2 stalked, M_3 absent; hindwing slender, only half as wide as forewing, not bilobed, with dorsal fringes up to four times as long as wing width, venation reduced, with M_1 absent and M_2 weakly marked as a fold. Male genitalia with contiguous pair of large uncus lobes, gnathos absent, tegumen wider than long. Female genitalia without signum. These characters combined clearly separate the new genus from *Apatetris* Staudinger, 1880 in the wide sense, in which the antennae, although with pecten, are about two-thirds length of forewing; forewing with M_1, M_2 and M_3 separate; hindwing more than half as wide as forewing, bilobed with a pointed apex separated by an emargination from a shorter more rounded lobe, fringes mainly about twice as long as wing width; uncus not consisting of two separate lobes; two signa (rarely more) present in most species, although absent in *Apatetris sensu stricto*. Janse (1951) analysed the *Apatetris* group in an even wider sense, including some species that lack the diagnostic characters of *Apatetris* (antennal pecten and bilobed hindwing) and described new South African genera (*Filisignella*, *Curvisignella* and *Anapatetris*) which resemble *Mondeguina* in having hindwings not bilobed, but they all differ substantially in wing venation from *Mondeguina*.





Figures 2, 3. Habitus. **2.** *Mondeguina atlanticella* male, Portugal, Ilha da Morraceira (A. Lameirinhas). **3.** *M. atlanticella* female, Portugal, Ilha da Morraceira (A. Lameirinhas).



Figures 4, 5. Male genitalia. **4.** *Mondeguina atlanticella*, Portugal, Ilha da Morraceira (P. Huemer 19/1230). **5.** *M. mediterranella*, Italy, Canale Quarantia (P. Huemer 05/1230).

Etymology. *Mondeguina* is named after the Mondego River, the longest river that runs its entire course within Portugal. The type locality for the new species described from Portugal (below) is the Ilha da Morraceira which lies in the estuary of the River Mondego.

The new genus *Mondeguina* has two species:

Mondeguina atlanticella Corley & Rosete, sp. nov.

Mondeguina mediterranella (Nel & Varenne, 2012), comb. nov.

Basionym: *Apatetris mediterranella* Nel & Varenne, 2012. *Nota lepidopterologica* 35: 28. Type locality: France, Mas Fondame, Salses-le-Château, Pyrénées-Orientales.

Mondeguina atlanticella Corley & Rosete, sp. nov.

http://zoobank.org/65EA7EB7-A7BE-4CCD-BBB4-F06849343CCD

Figs 2–4, 6, 7

Material examined. PORTUGAL. Holotype male: 'Ilha da Morraceira | Figueira da Foz | Coimbra | 40°07'59.25"N | 8°49'14.67"W | UTM/MGRS | 29TNE15284254 | Alt. 0–3m | Light trap, MV 160W | 24.vii.2018 | J. Rosete leg.' To be placed in NHMUK. Paratypes: 2 females, same data as holotype, but one gen. prep. M. Dale, MD02484, deposited in JRRC, other one deposited in TLMF; 1 female, same locality as holotype but collected on 6.vii.2018, to be placed in NHMUK; 1 specimen without abdomen, same locality as holotype but collected on 23.vi.2015, DNA barcode INV00726, deposited in JRRC; 3 males, same locality as holotype, but collected on 26.vi.2018, deposited in JRRC; 1 male, same locality as

holotype but collected on 1.vii.2018, P. Huemer gen. prep. 19 1230, deposited in TLMF; 1 male, same locality as holotype, but collected on 6.vii.2018, M. Dale, gen. prep. MD02492, deposited in JRRC; 2 males, same locality as holotype, but collected on 10.vii.2018, deposited in JRRC; 1 male, same data as holotype, gen. prep. M. Corley 5525, deposited in JRRC; 1 female, Lagoa de São José, Mata do Urso, Carriço, Pombal, Leiria, 40°00'19.52"N, 8°52'03.19"W, UTM/MGRS: 29TNE11302835, Alt. 47m, 28.vii.2017, J. Rosete leg., M. Dale gen. prep. MD02456, DNA barcode INV05884, deposited in MCRC; 1 female, Ludo, Faro, Algarve, 16.ix.1994, M. Corley, Corley gen. prep. 675, in MCRC.

Description. Wingspan 9–12 mm (Figs 2, 3). Head white, scales towards lateral margins tipped fuscous. Labial palp white with scales tipped fuscous on outer and ventral sides and lower part of inner side, segment 3 white. Antennal scape white with scales tipped fuscous, flagellum white, more or less ringed light fuscous in proximal part but markings increasingly obscure distally. Thorax white, scales tipped dark fuscous towards sides and on tegula. Forewing white, scales dark-tipped giving whole wing a dotted appearance, very indistinct markings formed by groups of scales with longer dark tips, particularly in mid-line of wing with a spot at two-fifths and a short streak around four-fifths, a small spot near dorsum at three-fifths; fringe of larger scales with blacker tips, not organised into a fringe line, dorsal fringe of hair-like scales; underside dull pale yellow more or less overlaid grey, particularly towards costa and apex. Hindwing whitish; fringes whitish, as long as wing width on costal side near base, longer towards apex and up to four times wing width on dorsal side. Legs white, scales tipped fuscous. Abdomen whitish yellow.

Variation. Ground colour may be white or whitish, the dark tips of the scales on head, scape, thorax, forewing and legs vary from fuscous to nearly black with blackest scales forming diffuse markings together with those at end of wing, the diffuse markings can be very obscure and may not be symmetrical on the two wings.

Male genitalia. (Figs 4, 6). Uncus a pair of stout lobes, twice as long as wide, tapering in distal half to truncate apex; tegumen approximately rectangular, wider than long, nearly as long as uncus lobes, anterior and posterior margins without significant bulges; valva as long as its width at base with broad sacculus reaching beyond middle and evenly curved distally, posterior portion of valva parallel-sided, apex rounded on costal side, slightly expanded on ventral side forming a group of about seven short sclerotised pegs; saccus deepest in middle where it is about one-third as long as uncus lobes; aedeagus tapering from base or a little above, to two-thirds, apical third narrower, sometimes ending in a slight hook.

Female genitalia. (Fig. 7). Posterior apophysis two-fifths length of papilla analis; segment VIII with ventral side largely excavated, anterior margin bulging craniad around the ostium, anterior apophysis short, half as long as posterior apophysis; ostium about one-quarter width of segment VIII.

Apparent variation. Male genitalia of *Mondeguina* are small, three-dimensional and difficult to open in conventional presentation, whether the genitalia are unrolled or not. Some structures remain difficult to see clearly or to interpret. For this reason, we have not described transtilla lobes. We also found apparent variation in shape of valva, depth of tegumen and saccus depending both on the presentation of the various parts in the preparation and on the person performing the dissection. This is exemplified by comparison of Figure 4 with Figure 6, which are preparations of male *M. atlanticella* performed by different persons.

Diagnosis. *M. atlanticella* and *M. mediterranella* are very similar externally, although average wingspan is slightly greater in *M. atlanticella* (9–12 mm against 8–10 mm). *M. atlanticella* differs from *M. mediterranella* in male and female genitalia (Figs 4–8). In male genitalia, *M. atlanticella*

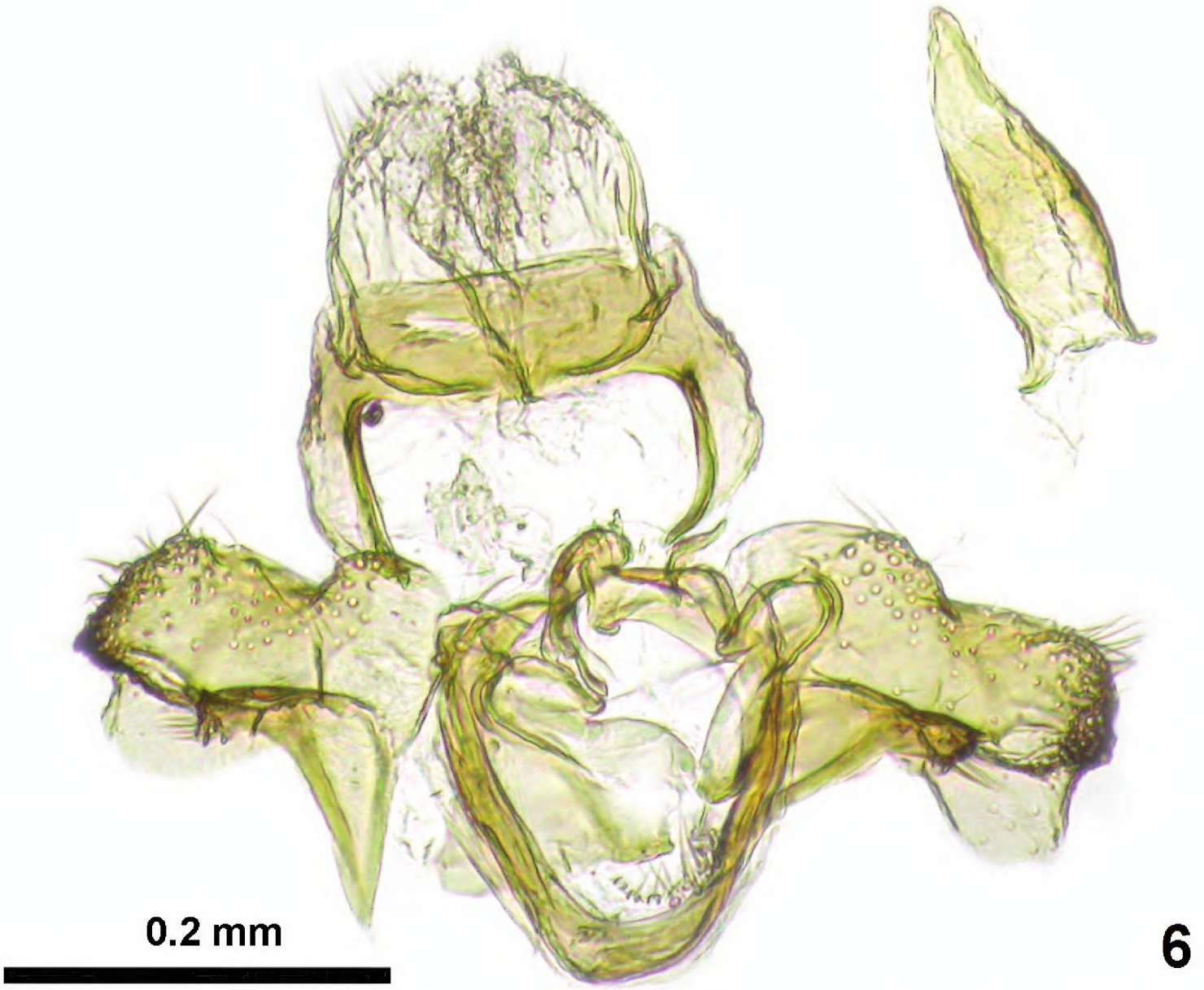
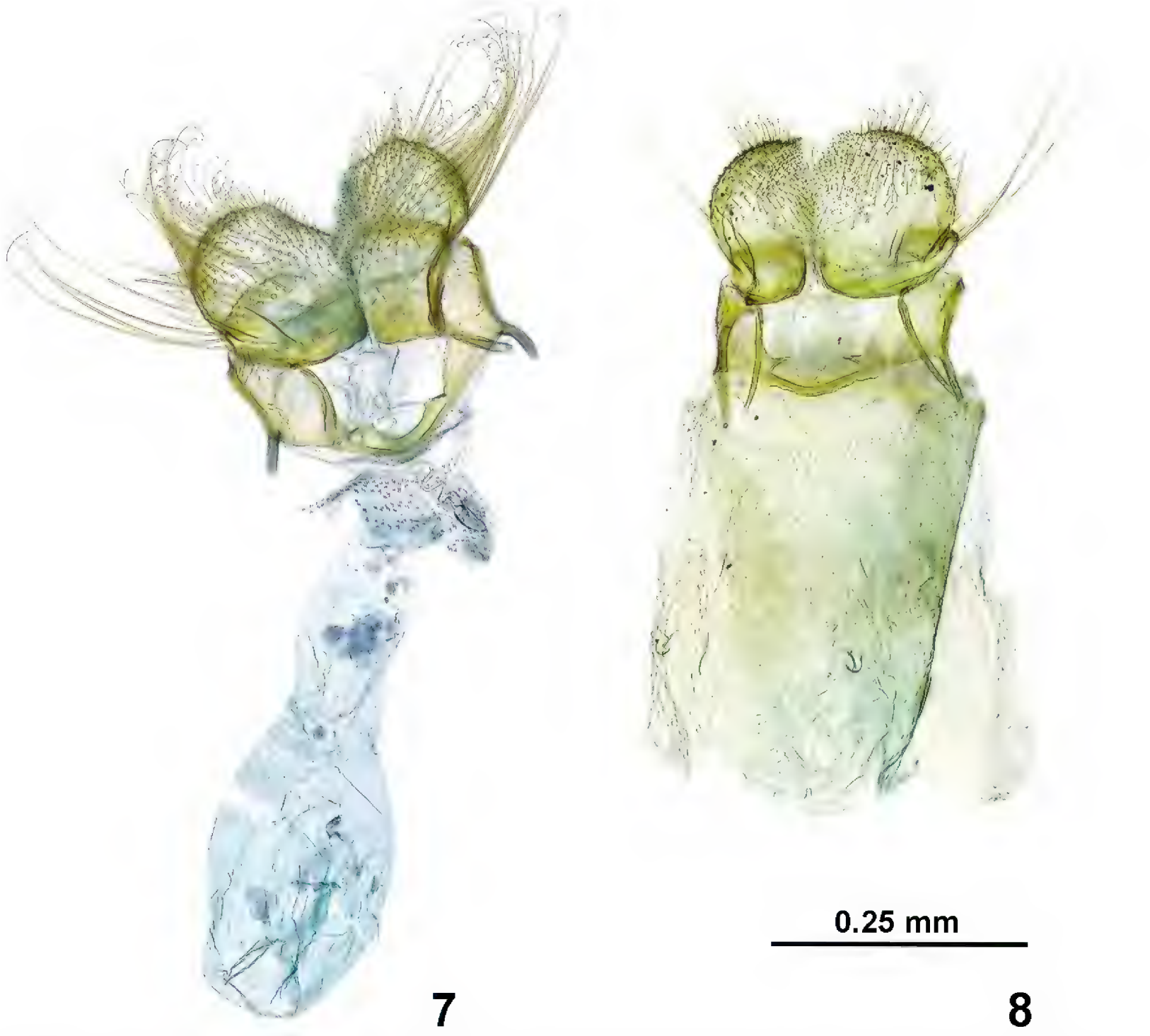


Figure 6. Male genitalia. *Mondeguina atlanticella*, Portugal, Ilha da Morraceira (M. Dale 02492).

has tegumen about twice as wide as long, without obvious bulge on anterior margin, and saccus deeper, two-fifths length of uncus lobe, while *M. mediterranella* has tegumen four times as wide as long, with length measured through the median bulge, and less deep saccus, about one-quarter length of uncus lobe. In the female of *M. atlanticella*, posterior apophysis is two-fifths length of papilla analis and ostium is about one-quarter width of segment VIII, while in *M. mediterranella* posterior apophysis is two-thirds length of papilla analis and ostium is two-fifths of the width of segment VIII.

Biology. Moths have been collected at light in late June and July and once in September. Although some came directly to the light, the majority were collected at rest on grasses a few metres away from the light. Larvae have not been found, but they may be leaf-miners on *Elymus athericus* (Link) Kerguélen.

Ilha da Morraceira lies in the tidal estuary of the Rio Mondego close to the mouth of the river. It consists of a mosaic of abandoned and active *salinas* (salt-pans) (Figs 9, 10). The vegetation is diverse, with few shrubs, but many different herbaceous plants on the sides of the access roads, on the banks separating the individual *salinas* and in abandoned ones. The lower parts of the separating banks are dominated by *Halimione portulacoides* (L.) Aellen and *Juncus maritimus* Lam., but the grass *Elymus athericus* (Link) Kerguélen is also abundant, and may be the food-plant of *M. atlanticella*.



Figures 7, 8. Female genitalia. **7.** *Mondeguina atlanticella*, Portugal, Ilha da Morraceira (M. Dale 02484). **8.** *M. mediterranella*, France, Arles (M. Dale 02653).

The other site on the western coast of Portugal, Lagoa de São José is a small lake behind sand dunes which is gradually silting up. It is surrounded by a forest of *Pinus pinaster* Aiton. The sandy soil around the lake has a variety of shrubs: *Erica* L. spp., *Cistus* L. spp., *Halimium* (Dunal) Spach spp., and *Corema album* (L.) D. Don with scattered larger shrubs such as *Morella faya* (Aiton) Wilbur, *Rhamnus alaternus* L., *Arbutus unedo* L. and *Salix repens* L. Herbaceous plants include *Juncus* spp., *Ammophila arenaria* (L.) Link, *Elymus* L. sp., *Silene littorea* Brot., *Iberis procumbens* Lange, *Seseli tortuosum* L. and *Asphodelus* L. spp.

The third site, 2 km north of Ludo is 3.5 kilometres inland from the south coast of Portugal. The trapping site was on a track separating a low sandy hill with *Pinus pinaster* and a rich understorey of shrubs and herbs on one side and a small floodplain meadow bordering the Ribeira de São Lourenço on the other side.

Figures 9, 10. Habitat of *Mondeguina atlanticella* at Ilha da Morraceira (J. Rosete).

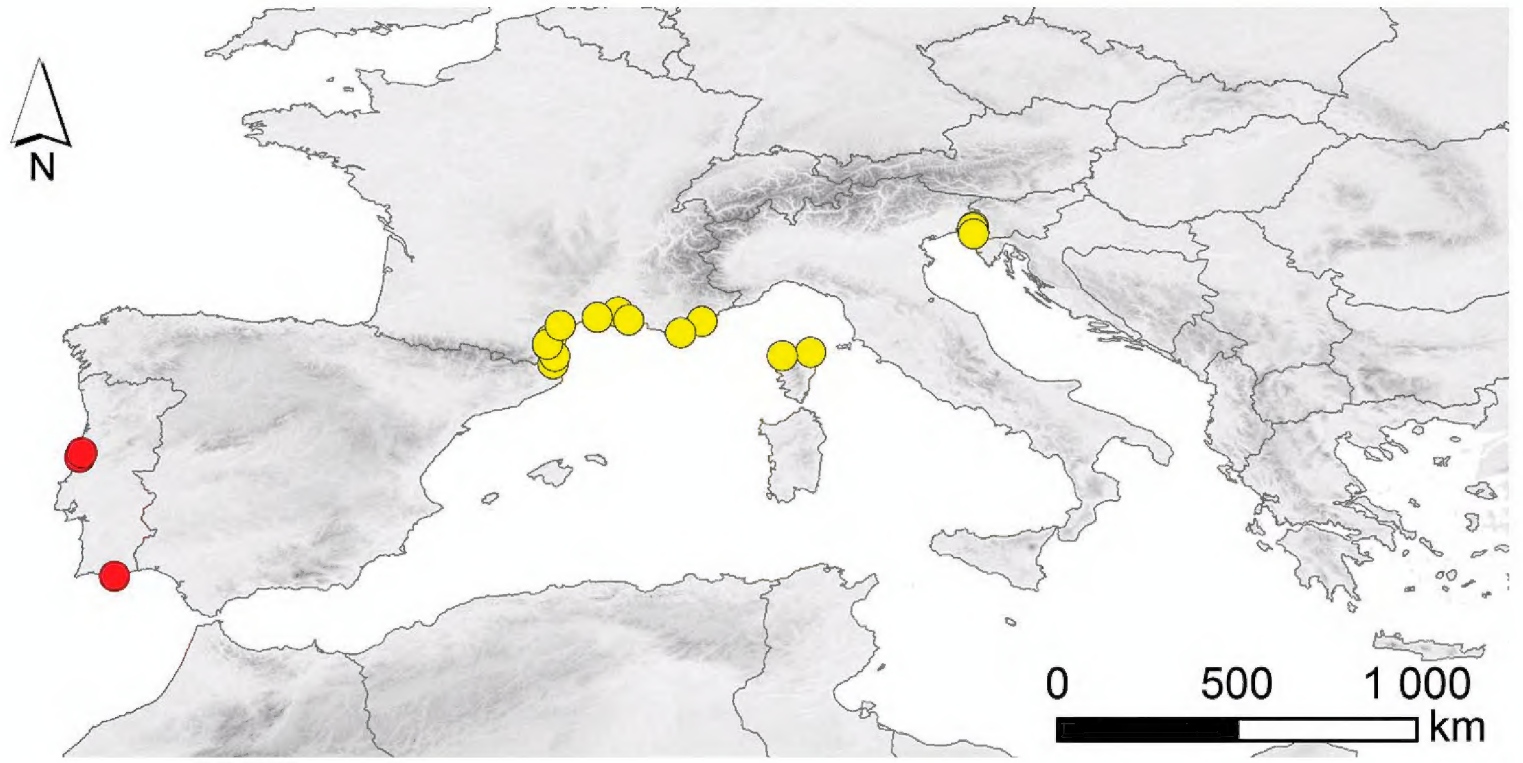


Figure 11. Distribution of *Mondeguina* species. Red circles *Mondeguina atlanticella*. Yellow circles *Mondeguina mediterranella*.

Distribution. *M. atlanticella* is currently known from two sites about 22 kilometres apart, close to the coast of Beira Litoral in central Portugal and a single site in Algarve, north-west of Faro airport (Fig. 11). It can be expected to be found more extensively along the Portuguese coast.

Etymology. The epithet *atlanticella* refers to the proximity to the Atlantic Ocean of the known sites and contrasts with the Mediterranean coast distribution of *M. mediterranella* (Fig. 11).

Discussion. Recent authors discussing the problems of the *Apatetris* group (Sakamaki 2000; Junnilainen and Nupponen 2010; Nel and Varenne 2012) have emphasised the lack of a global revision of the group, although Janse (1951) had been able to characterise several of the genera involved, largely based on wing venation, wing shape and the structure of the labial palpi. Classification of gelechiid genera in the second half of the 20th century relied heavily on male genitalia and this has been a significant impediment to further revision of the *Apatetris* group because the type species of the genus, *Apatetris mirabella* Staudinger, 1880 was described from a single female from the province of Amasya in the Black Sea region of Turkey. Staudinger stated it to be male, but Janse (1951) showed it to be female. It has apparently never been collected again. The main features of the genus given by Staudinger were the antennal scape with pecten and the bilobed hindwing, with the costal lobe pointed and the dorsal lobe rounded, these lobes separated by a notch. Janse (1951) after studying material from Europe, Asia, Africa, North and Central America constructed a key to some of the genera of the *Apatetris* group and re-diagnosed the genus, adding the additional characters of a rudimentary haustellum and maxillary palps, the labial palpus shorter and less ascending than usual for Gelechiidae.

Sakamaki (2000) recognised the high level of diversity within *Apatetris sensu lato* and the need for a world-wide revision of the genus. His contribution was to describe two new Japanese species in the genus which he considered would help to advance knowledge of the group. One of these species, *A. elymicola* is close to *A. kinkerella* (Snellen, 1876), which is now placed in *Dactylotula* (e.g. Karsholt and Nielsen 2013). The other, *A. elaeagnella*, while belonging to Apatetrini, appears to be a misfit in *Apatetris*: female genitalia have a belt of small signa whereas other species have a pair of

signa or none and the labial palpus is unique in being reduced to a single segment. Junnilainen and Nupponen (2010) recognised two different groups within Eurasian *Apatetris*, referring them to the existing genus names *Dactylotula* and *Catatinagma*. These differ in several characters of which the most useful are forewing markings, valva structure and type of signum. *Dactylotula* has forewing without spots, short, broad valva and plate-shaped signa; *Catatinagma* has forewing with spots, valva almost separate from sacculus and brush-shaped signa. Figure 1 indicates a more complex situation, even if only European species of *Apatetris sensu lato* are considered. Four groups are evident: 1. *Catatinagma*; 2. *Mondeguina*; 3. An unnamed group including specimens from Italy and the Balkan countries; 4. *Dactylotula*.

This separation appears valid for Europe and the nearer parts of Asia but relationships are likely to be more complex if further taxa from the rest of the world are considered. In Figure 1 and Table 1 three species of the Australasian genus *Epiphthora* are included, but one is well separated from the other two. This suggests that the genus is likely to include paraphyletic elements.

The four European groups in Figure 1, derived from available DNA barcodes, require a few additional comments. In the course of preparation of this paper we also examined Portuguese specimens identified as *Apatetris agenjoi* Gozmány, 1954 (including INV06257). Junnilainen and Nupponen (2010) had omitted this species from consideration "because it is known only from Spain and does not coincide well with any of the genera treated here". Nevertheless, male genitalia and wing markings of this species place it in *Catatinagma*, and it also shares the head structure of *Catatinagma*, which has a truncated conical projection on the frons. Furthermore, genetic evidence provided by the DNA barcode fragments corroborates that *A. agenjoi* is more closely related to *Catatinagma trivittellum* Rebel, 1903 and *C. kraterella* Junnilainen & Nupponen, 2010 than to any other species of *Apatetris sensu lato* (Fig. 1, Table 2). Although Gozmány (1954) neither described nor figured the genitalia, Ole Karsholt (pers. comm.) informs us that he has seen the type of *A. agenjoi* and that it belongs to the species flying in the Iberian Peninsula. With this assurance we are able to make the new combination:

***Catatinagma agenjoi* (Gozmány, 1954), comb. nov.**

Basionym. *Apatetris agenjoi* Gozmány, 1954. *Ann. Hist.-nat. Mus. Nat. Hung.* 5: 282.

Type locality. Spain, Murcia, Alberca.

We have not had the opportunity to examine the unnamed '*Apatetris*' from the Balkan countries, and consider it to be outside the scope of this paper. Available sequences from BOLD indicate two *Dactylotula* species (Table 1), yet all have been referred to *D. kinkerella*. From the photographs on BOLD, it is clear that those from the Czech Republic, France and Spain actually belong to *D. altithermella* (Walsingham, 1903).

Notes. Against the background outlined above, it may be considered unwise of us to describe a new genus based on a species already placed in *Apatetris*. We justify our decision by pointing out that *M. mediterranella* should never have been described in *Apatetris* as the shape of the hindwings is quite different from that which defines the genus. In addition, the unusually long antennae are not mentioned for any species in the *Apatetris* group, indeed Staudinger (*loc. cit.*) gave the antenna length as a little over half forewing length; forewing venation with M_1 and M_2 stalked appears to be unique in the *Apatetris* group; the absence of a signum in the female genitalia is also different

from most *Apatetris sensu lato* species, although according to Janse (1951), *A. mirabella* has no signum. In our view the two species considered in this paper, *A. mediterranella* and *A. atlanticella* have no place in *Apatetris* as defined by either Staudinger or Janse, nor in any of the related genera and therefore require a new genus. Genetic evidence provided by the DNA barcode fragments sequenced corroborates their distinctness from other *Apatetris sensu lato* available in the BOLD database, either European or from other continents (Fig. 1).

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